

USSR

UDC: 621.396.6-181.48

DANILIN, B. S.

"Vacuum Technology in the Production of Integrated Circuits"

Vakuumnaya tekhnika v proizvodstve integral'nykh skhem (cf. English above), Moscow, "Energiya", 1972, 256 pp, ill 89 k. (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8v289 K)

Translation: The paper deals with fields of application of thin films in the production of integrated circuits, the interaction of the residual atmosphere with the films as they are formed, equipment for checking the rate of deposition and the thickness of the thin films, types and designs of installations for deposition of thin films, ways to improve the parameters of the installations and to increase their productivity. The book is written for an extensive class of persons engaged with the design, installation and operation of vacuum devices for producing thin films, as well as for specialists working in the area of thin-film technology. Resumé.

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UDC: 621.382

DANILIN, B. S., YEFIMOV, I. Ye., Active Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications

"Prospects for Microelectronics"

Moscow, Radiotekhnika, Vol. 26, No 5, May 71, pp 3-11

Abstract: The article surveys the present state and future prospects of microelectronics with particular emphasis on problems of reliability. Topics covered include the use of semiconductor and thin-film electronics in integrated circuitry, MOS transistors in hybrid integrated circuits, the use of semiconductor logic circuits in computer technology, large-scale integration, microwave integrated circuitry, and the use of integrated circuits in computer technology, communications equipment and household appliances. It is assumed that efforts in microelectronics in the coming decades will be concentrated on development of integrated circuitry, both improvement of existing techniques and research on the use of new physical phenomena in this branch of microelectronics. The use of electron and ion beams shows great promise for the production of integrated circuits. The coming years should see applications of semiconductor elements with negative resistance, electronic phenomena accompanying phase transitions, superconductivity phenomena, strong field effects, injection of

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DANILIN, B. S., et al, Radiotekhnika, Vol. 26, No 5, May 71, pp 3-11

current carriers in amorphous films, optrons, semiconductor lasers, fiber lasers, fiber optics and other devices and phenomena in microelectronics. There is hope that new solid-state devices will be developed as a result of wave processes in media with volumetric negative differential conductivity. Such devices might give us amplifiers, frequency converters, high-speed switches and other elements with a specific power considerably higher than that possible with transistors. The use of optoelectronic phenomena should also provide considerable material for future research in microelectronics.

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21(5,10)

SOV/25-59-6-31/49

AUTHOR: Danilin, B.S., Candidate of Technical Sciences

TITLE: The Ionic Pump

PERIODICAL: Nauka i zhizn', 1959, Nr 6, p 67 (USSR)

ABSTRACT: This is a concise description of 2 kinds of modern vacuum-producing pumps: the ionic pump and the ionic-evaporative pump. Special attention is drawn to the ionic-evaporative pump working with titanium. As deep as  $10^{-9}$  mm of mercury column vacuum can be reached with such a pump, and its performance is 10,000 liters per second. Such a deep vacuum is said to be needed in a series of technical processes, including thermonuclear ones. There is 1 schematic diagram.

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*Not Same as B.S. Danilin doc # 5802799*

ENGINEERING

Aeronautical and Space

USSR

UDC 533.697+533.6.011

DANILIN, G. A., Moscow

"Asymptotic Solution of Navier-Stokes Equations for the Flow of a Compressible Fluid in the Plane of a Channel with Intensive Injection from the Walls"

Mekhanika Zhidkosti i Gaza, No 6, 1971, pp 76-82.

ABSTRACT: The problem is studied of determining the friction, heat flux, spreading line and longitudinal pressure gradient in the area of the central flow line for the flow of a homogeneous, weightless compressible fluid through a flat channel with intensive injection through the walls. The asymptotic formulas produced are compared with the results of numerical calculations and the boundary of their applicability is established. Numerical calculations show that with increasing intensity of injection, the boundary layer moves away from the wall. A similar picture was observed in a shock layer with great injection through the surface of a body.

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UDC 533.6.01.6

DANILIN, G. A., Moscow

"Asymptotic Solution of Equations of the Shock Layer in the Vicinity of the Critical Point of a Sphere at Intensive Injection"

Moscow, Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 73, pp 164-168

Abstract: The asymptotic solution of equations of the shock layer in the vicinity of the critical point of a sphere at intensive injection is formulated. Asymptotic solutions are compared with numerical outcomes and their applicability limit is determined. The comparison of calculations from asymptotic formulas with exact numerical solutions shows a fairly rapid convergence of asymptotic solutions of a series of listed publications; this makes it possible to establish a criterion for high injection. Assuming a constant gas heat capacity and considering the shock wave to be a mathematical surface of discontinuity, the deviation of the shock wave and characteristics of the line of spreading, of friction, and of the heat flux on the wall were determined and formulas for the

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DANILIN, G. A., Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 73, pp 164-168

injection effect on the pressure distribution were deduced. Numerical calculation results are discussed by reference to diagrams. The pressure distribution on the wall can practically be determined from the ideal flow for all parameter values of injection. Four figures, sixteen formulas, seven bibliographic references.

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USSR

UDC 621.391.72

VALEYEV, V. G., DANILOV, V. A.

"Signal Detection Against a Background of a Class of Nongaussian Noise"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2192-2196

Abstract: A study was made of signal detection in the presence of correlated FM random processes. A previous effort [V. A. Loginov, Izv. AN SSSR, Tekhnicheskaya kibernetika, No 5, 1970] was made to investigate signal detection without restrictions on the degree of correlation of the interfering process; however, the conclusions of that paper are valid only in the case of noise with rigid correlation where the correlation coefficient in the observation interval is close to one. Now, the correlation properties are considered by approximating the noise signal of a single-coupled Markov series. The description of the real oscillations (nonmarkov) by simple Markov series is permissible for small values of the correlation coefficient  $R$  between the values of the series. The accuracy of this description increases with a decrease in  $R$  and is always higher than the description of the series of independent values. Quantitative relations are derived which characterize the efficiency of optimal processing by comparison with processing in a matched filter and in the system made up of an inertialess nonlinear quadrupole and a matched filter. For this purpose the effect of the correlated FM noise on the given system and on the matched filter

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VALEYEV, V. G., et al., Radiotekhnika i Elektronika, Vol 17, No 10, 1972, pp 2192-2196

is investigated. Graphs are plotted showing that under the conditions of correlated FM noise the optimal processing is appreciably more efficient than processing in a matched filter, and for large  $R(\tau)$  the optimal processing is several times better than processing by the quadrupole-filter system.

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USSR

UDC 669.046.5

ANSHELES, I. I., FEDOSEYEV, V. V., OYSK, G. N., YEGOROV, A. V., SOROKIN, S. P., TYURIN, Ye. I., DANILIN, V. I., SELIVANOV, V. M., SIVKOV, S. S., ZYRYANOV, Yu. Ye., and BALDAYEV, B. Ya.

"Use of Electromagnetic Stirring in Vacuum Melting of Steel in a Ladle"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISI), (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 222-227

Translation of Abstract: Brief technical characteristics are given of the electromagnetic stirring of steel in a ladle. Data are presented on the effect of electromagnetic metal stirring on the uniform distribution of added deoxidizers and alloying elements, and also on the significant increase in the duration of vacuum smelting. A new production technology for the ShKh15 steel is presented in which complete deoxidation and alloying is conducted in the ladle at the end of vacuum smelting. The suggested method is theoretically substantiated. The results of the first experimental melts are presented. 3 tables.

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USSR

UDC 669.046.5

UDC 669.046.5

PETROV, B. S., VISHKAREV, A. F., TYURIN, Ye. I., DANILIN, V.I.,  
SELIVANOV, V. M., and YAVOYSKIY, V. I.

"Degree of Oxidation of Stainless Steels With Oxygen Blowing"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS) (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 196-198

Abstract: Results are presented of a study on the degree of bath oxidation with oxygen blowing during decarburization at less than 0.20% C content (nickel-free steels with 6-8 and 14-16% Cr and steels with 14-16% Cr, and 11 and 30% Ni). It is established that the degree of metal oxidation depends strictly on carbon concentration, although the oxidation level is determined by the initial Cr and Ni concentrations. 1 figure, 2 references.

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USSR

UDC 669.046.5

KUDRIN, V. A., YELANSKIY, G. N., BABICH, V. K., MOTOV, V. I.,  
TYURIN, Ye. I., and DANILIN, V. I.

"Technology of Quality Steelmaking in Basic Martin Furnaces Under Contemporary Conditions"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS) (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys) Izd-vo "Metallurgiya," No 61, 1970, pp 66-73

Translation of Abstract: Results of investigations on the theoretical development and practical testing of a rational technology for conducting martin steelmaking under contemporary conditions are presented. 6 figures, 23 references.

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DANILIN, V. I., DROZD, M. S., SLAVSKII, Yu. I.

"Use of Specimenless Method of Testing the Mechanical Properties of Steels Under Conditions of Metallurgical Production"

Zavodskaya Laboratoriya, No 2, 1972, p 217-221.

Abstract: Results are presented from an industrial test of the reliability of the method of acceptance testing of the basic mechanical properties of steel on the basis of hardness. It is demonstrated that hardness testing can be used to produce a satisfactory evaluation of the suitability of metal as regards mechanical properties, as determined by the applicable state standard or technical conditions for various types of steels. The results of the hardness tests are judged reliable due to the fact that in almost all cases, those batches of metal judged acceptable on the basis of the hardness tests were also judged acceptable on the basis of more complete mechanical testing of specimens. Specifically, in only three cases of 100 did the results of tensile testing disagree with the results of hardness testing.

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USSR

UDC 621.382.3

DANILIN, V.N., KONSTANTINOV, P.B., MOROZOV, A.A., FILATOV, A.L., CHERNYAVSKIY, A.A.

"Increase Of Cutoff Frequency Of Gain Of Alloy-Diffused Transistors"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, No 1(51), pp 152-161 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B417)

Translation: Methods are described for an increase of the cutoff frequency of the gain  $F_T$  of alloy-diffused transistors (to 1.5--2 GHz). The technological method proposed makes it possible directly to decrease the thickness of the active base and the area of the emitter junction of the transistor. With an increase of the cutoff frequency, it is possible to increase the value of the breakdown voltage of the emitter junction, and also to obtain a transistor suitable for use in circuits with direct automatic gain control. Experimental results are presented. 10 ref. Summary.

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USSR

UDC 621.382.3(C88.8)

DANILIN, V.N., KONSTANTINOV, P.B., MOROZOV, A.A., FILATOV, A.L., CHERNYAVSKIY, A.A.

"Transistor For Circuits With Automatic Gain Control"

USSR Author's Certificate No 256084, filed 10 June 67, published 19 March 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B163P)

Translation: In the proposed structure of a transistor for circuits with AGC, the electrodes for the emitter and base are made by alloy-diffusion technology (in contrast to deposition in mesa structures), and the small active area of the emitter junction, necessary to assure a decrease of gain at high frequency, is assured because of a radial clearance between the base layer and the emitter electrode. A high-resistance semiconductor wafer with a resistivity not less than 1 ohm.cm serves as the base for the device, and the invariability of the dimensions of the emitter electrode assures reliability of the emitter lead out connection irrespective of the area of the emitter junction. By changing the area of the radial clearance, it is possible to obtain transistors of various classes with constant dimensions of the initial blank [zagotovka]. P.S.

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DANILIN, V. P.

Gyros

So: JPRS 59651  
30 July 73

CAROL  
(2)

THE DEPENDENCE OF AN ELECTROSTATIC GYROSCOPE'S RUNDOWN TIME ON ROTOR IMBALANCE

Article by V. P. Danilin, Yu. G. Matyushenko, and I. V. Novozhilov; Moscow, INVESTITSIY ANATOMI I KART SOSTI, Moscow, 1972, No 2, 1973, pp 20-22

The authors examine the case of an electrostatic gyroscope having a rotor in the shape of a sphere [1, 2]. The rotor is located in a housing, the inner cavity of which has had the air evacuated from it. The follow-up system, which provides the rotor suspension, contains devices for the measurement of the rotor's displacement relative to the housing and a system of electrodes that are located on the housing's inner surface. The electrical potentials in the electrodes are formed as a function of the displacement sensors' readings in such a fashion that the suspension has the necessary rigidity and damping ability. When the gyroscope is being readied for use, the rotor is started spinning by an auxiliary system and then, when in operation, spins by inertia. This arrangement provides an unlimited rotor rotation period, since in the ideal case there is no dissipation of the rotor's energy of rotation. The difference between this setup and a real instrument leads to a decrease in the rotor's angular velocity in time, or to rotor "rundown."

In this article, the authors discuss the effect of rotor imbalance on its rundown. It can be expected that imbalance leads to rotor wobble relative to the housing and the dissipation of the rotor's energy of rotary motion by the



USSR

UDC 612.821.7

DANILIN, V. P., I. M. Grashchenkov Laboratory for Problems of the Control of Functions in Man and Animals, Academy of Sciences USSR

"Subjective Evaluation of the Duration of Periods of Night Sleep After Deprivation of Delta Sleep in the First Three Cycles"

Moscow, Doklady Akademii nauk SSSR, No 4, 1973, pp 990-992

Abstract: Fifteen male subjects age 21 to 36 were allowed to sleep through the first night of the experiment without being aroused. The second night they were awakened at the end of each cycle in the rapid sleep stage to evaluate the quality (depth) of sleep, tell whether they had thoughts or dreams prior to arousal, and to guess the length of time that elapsed since the preceding arousal. The third night they were deprived of delta sleep in the various cycles by loud noise and then asked the same questions. Analysis of the correct answers, underestimates, and overestimates by cycles of the second night showed a predominance of underestimates of time and a decrease in overestimates in the fourth to sixth cycles compared to the first three cycles. On the third night (with deprivation of delta sleep in the first three cycles) the pattern was altered: there was a tendency for the distribution in the morning cycles of the third night to differ from that in the same

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DANILIN, V.P., Doklady Akademii nauk SSR, No 4, 1973, pp 990-992

cycles of the second night and for the first three cycles to resemble one another. Thus, interference with the natural dynamics of slow sleep (elimination of delta sleep) changed the subjective evaluation of the duration of both the cycles in which the disruption took place and the subsequent cycles.

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USSR

UDC 576.2

DANILIN, V. B., and LATAS, L. P., Laboratory of Control Problems of the Functions of the Organism of Man and Animals imeni N. I. Grashchenkov, Academy of Sciences USSR, Moscow

"Subjective Estimate of the Duration of Periods of Sleep in the Case of Awakening in Different Stages, Phases and Cycles"

Moscow, Doklady Akademii Nauk SSR, Vol 204, No 3, 1972, pp 748-751

Abstract: An effort has been made to use a subjective estimate of sleep periods with respect to their duration and quality in the presence of awakening in different stages and phases of sleep, by comparison with the objective electropolygraphic recording indexes, and judgment of the characteristic features of the psychological activity which either was not perceived or was not remembered by the subject. Fourteen healthy men from 21 to 46 years old (averaging 28 years old) participated in the experiments. The results obtained revealed the obvious dependence of the subjective estimate of the duration of the preceding sleep period on several factors: the stage and phase of sleep at the time of awakening, the order number of the sleep cycle on awakening (the first or second half of the night), the first or repeated awakening in the given cycle and the stage of sleep during preceding awakening, and the nature of the psychological

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DANILIN, V. P., and LATAS, L. P., Doklady Akademii Nauk SSR, Vol 204, No 3, 1972, pp 748-751

activity before awakening. It was discovered that during the first (within the limits of the given cycle) awakening from delta sleep, more than half of the estimates of the time past are low, often very significantly low. The discovered difference between the nature of the estimates of the duration of the preceding sleep period on awakening from the fast sleep phase during the first and second halves of the night can be stated in connection with the presence or absence of the delta sleep stages before the fast sleep episode. The absence of these stages before fast sleep during the second half of the night obviously leads to a relative decrease in the saturation of the fast sleep by the psychophysiological process fixed in the memory with corresponding underestimation of the time occupied by other slow sleep stages or even the duration of fast sleep itself. Consequently, there is a functional difference between the fast sleep periods with the preceding delta sleep and without it.

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1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--DEPENDENCE OF THE RUNOUT TIME OF AN ELECTROSTATIC GYROSCOPE ON THE  
ROTOR UNBALANCE -U-  
AUTHOR-(03)-MARTYNENKO, YU.G., NOVOZHILOV, I.V., DANILIN, V.P.  
COUNTRY OF INFO--USSR  
SOURCE--IZVESTIYA, MEKHANIKA TVERDOGO TELA, MAR. APR. 1970, P. 20-22  
DATE PUBLISHED-----70  
SUBJECT AREAS--NAVIGATION  
TOPIC TAGS--GYROSCOPE MOTION, ELECTROSTATICS, VIBRATION DAMPING, RUNOFF  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/0268 STEP NO--UR/0484/70/000/000/0020/0022  
CIRC ACCESSION NO--AP0124029  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124029

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE EFFECT OF ROTOR UNBALANCE ON THE RUNOUT TIME OF AN ELECTROSTATIC GYROSCOPE WITH A SPHERICAL SHAPED ROTOR. IT IS SHOWN THAT THE ROTOR UNBALANCE LEADS TO BEATING OF THE ROTOR RELATIVE TO THE GYROSCOPE CASING AND TO DISSIPATION OF THE ROTATIONAL MOTION ENERGY OF THE ROTOR BY DAMPING FORCES OF THE GYROSCOPE SUSPENSION. A FORMULA GIVING THE TRUE RUNOUT TIME OF THE GYROSCOPE IS PRESENTED, AND AN EXAMPLE ILLUSTRATING THE CALCULATION OF THE RUNOUT TIME IS CITED.

UNCLASSIFIED

Thermodynamics

USSR

UDC 536.42

DEYCH, M. Ye., TSIKLARI, G. V., SHANIN, V. K., and DANILIN, V. S., Moscow  
Power Engineering Institute

"Studying Wet Vapor Flows in Nozzles"

Moscow, Teplofizika Vysokikh Temperatur, Vol 10, No 1, Jan-Feb 1972, pp 122-129

Abstract: The authors present the results from the experimental and theoretical study of the flow of a wet vapor in nozzles within a broad range of initial moisture content and initial pressure. Specific methods are developed and used for studying two-phase flows. Experimental data obtained in studying nozzles operating on wet water vapor within a broad range of initial pressure and degrees of dryness are analyzed. The following types of experimental units were used in the study: stand for optical investigation, weighing unit, and a high-pressure water vapor stand. An optical method is used for determining the dimensions and the spectrum of the particles of the liquid phase, the phase being dispersed by the vapor in a flat, narrowing nozzle. The optical method is based on the scattering of light during its passage through a turbid medium: small-angle method by K. S. Shifrin and V. N. Golikov. A schematic is given of the unit for determining the degree of

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DEYCH, M. Ye., et al., Teplofizika Vysokikh Temperatur, Vol 10, No 1, Jan-Feb 1972, pp 122-129

dispersion of particles by the "small angles" method. The results show that initial pressure within the range studied affects significantly the thrust, power, and consumption characteristics of a two-phase nozzle. It also has a significant effect on the liquid phase dispersion process. Original article: eight formulas, eight figures, and 12 bibliographic entries.

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Numerical Analysis

USSR

DANILIN, Yu. M. (Kiev)

"Minimization Methods Based on an Approximation of the Initial Functional by a Convex One"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki; September-October, 1970, pp 1067-80

ABSTRACT: The author presents an approach to some iteration methods of minimizing smooth functionals, with the condition that  $n$ -term segments of a Taylor series for a functional are convex in the region under consideration. The suggested process is used at each step in the solution of the problem of minimizing some segment of a Taylor series and calculating the values of the initial functional. Under certain conditions the convergence of such a process is proved. Farther on, the author goes into more detail for the cases  $n = 1, 2$ : i.e., when only linear or, at most, second-order terms in a Taylor series are considered. For  $n = 1$ , this method is a gradient method; for  $n = 2$ , the Newton method for minimization of a convex functional; but in both cases the means of selecting the numerical parameter ("length" of the correction) is different from those suggested by other authors. Applications of the methods to problems with restrictions on the type of equation are given in the concluding section of the article.

The article includes 40 equations. There are 11 bibliographic references.

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1/3 030 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--REFLECTION COEFFICIENT AND FREQUENCY CHARACTERISTICS OF THE E SUBS  
LAYER -U-  
AUTHOR--(04)-DANILINA, E.N., DERGUNOVA, A.A., OVEZGELDYEV, O.,  
SHIRMAMEDOV, M.  
COUNTRY OF INFO--USSR  
SOURCE--IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR, SERIYA  
FIZIKO-TEKHNICHESKIKH, KHIMICHESKIKH I GEOLOGICHESKIKH NAUK, NO 3, 1970,  
DATE PUBLISHED-----70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, NAVIGATION

TOPIC TAGS--E LAYER, RADIO COMMUNICATION, IONOSPHERIC STATION, RADIO WAVE  
ABSORPTION, FREQUENCY CHARACTERISTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0394

STEP NO--UR/0202/70/000/003/0115/0118

CIRC ACCESSION NO--AP0137487

UNCLASSIFIED

2/3 030

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137487

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. WITH RESPECT TO RADIO

COMMUNICATION THROUGH THE E LAYER IT IS IMPORTANT TO STUDY THE REFLECTION COEFFICIENT P E SUBS FOR DIFFERENT RATIOS OF THE WORKING FREQUENCY OF SOUNDING F SUBWORK AND THE FREQUENCY CHARACTERISTICS OF THIS LAYER F SUBO E (CRITICAL REFLECTION FREQUENCY) AND F SUBB E SUBS (SCREENING FREQUENCY). FOR THIS PURPOSE DURING THE SUMMER OF 1968 SYNCHRONOUS OBSERVATIONS WERE MADE AT ASHKHABAD USING AN IONOSPHERIC STATION AND AN APPARATUS DESIGNED FOR MEASURING THE ABSORPTION OF RADIO WAVES IN THE IONOSPHERE BY THE A SUB1 METHOD. THE OBSERVATIONS WERE MADE USING THE FOLLOWING PROGRAM: THE IONOSPHERIC STATION OPERATED IN A FIVE MINUTE REGIME AND GAVE THE TIME VARIATION OF F SUBO E SUBS AND F SUBB AND E SUBS. THE APPARATUS FOR MEASURING ABSORPTION OPERATED AT A FIXED FREQUENCY OF 3.0 MC-SEC. 10 MINUTE MEASUREMENTS ALTERNATED WITH 5 MINUTE BREAKS, MAKING IT POSSIBLE TO DETERMINE THE TEMPORAL VARIATIONS P E SUBS. THE INITIAL EXPERIMENTAL DATA WERE PROCESSED BY STANDARD METHODS. SEVEN SERIES OF SIMULTANEOUS MEASUREMENTS WERE MADE WITH A TOTAL DURATION OF MORE THAN 25 HOURS. COMPARISON OF THE TEMPORAL VARIATIONS OF THE FREQUENCY PARAMETERS F SUBO E SUBS, F SUBB E SUBS AND THE REFLECTION COEFFICIENT P E SUBS REVEALS THAT FOR THE MOST PART THE FOLLOWING TENDENCY IS OBSERVED: WHEN F SUBWORK IS LESS THAN OR CLOSE TO F SUBB E SUBS, P E SUBS  $\approx$  1. IN THESE CASES THE E SUBS LAYER IS A MIRROR REFLECTING LAYER. THE P E SUBS VALUE DECREASES WHEN F SUBWORK IS GREATER THAN F SUBB E SUBS, WHICH IS DETERMINED FOR THE MOST PART BY THE F SUBWORK-F SUBB E SUBS RATIO.

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137487

ABSTRACT/EXTRACT--AS AN EXAMPLE, THE ARTICLE GIVES THE RESULTS OF SIMULTANEOUS CONTINUOUS MEASUREMENTS MADE ON 29 JUNE 1968. THE DATA IN THE ARTICLE ARE OF A PRELIMINARY NATURE BUT THEY SHOW THAT IN CONTRAST TO THE REGULAR LAYERS OF THE IONOSPHERE, THE VALUES OF THE COEFFICIENT OF REFLECTION FROM THE E LAYER AT FREQUENCIES GREATER THAN  $F_{SUBB E SUBS}$  ARE DETERMINED BY THE RATIO  $F_{SUBWORK} - F_{SUBB E SUBS}$ . CASES OF REGISTRY OF  $P E SUBS$  GREATER THAN 1 WERE NOTED; THESE OCCURRED IN EVERY SERIES. THESE CASES ARE OBSERVED MOST FREQUENTLY WHEN  $F_{SUBB E SUBS}$  IS CLOSE TO OR GREATER THAN  $F_{SUBWORK}$ , THAT IS, THE CONDITIONS ARE CLOSE TO MIRROR REFLECTION. THESE VALUES OF THE REFLECTION COEFFICIENT ARE ANOMALOUS AND REQUIRE SPECIAL ANALYSIS. FACILITY: INSTITUTE OF PHYSICS OF THE EARTH AND ATMOSPHERE, ACADEMY OF SCIENCES TURKMEN SSR; ASHKHABAD.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ELECTROLYTE FOR THE ELECTROCHEMICAL POLISHING OF TUNGSTEN -U-  
AUTHOR--(05)-DANILINA, G.A., PETROSYAN, A.K., VASILYEV, V.G., KANEVSKIY,  
YU.L., GAVRILOV, V.M.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 260,789  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--06JAN70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--CHEMICAL PATENT, ELECTROLYTE, TUNGSTEN, ELECTROLYTIC POLISHING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1994/1993 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0115792  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0115792

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTROLYTE USED IN THE  
ELECTROCHEM. POLISHING OF W WITH ABRASIVE DISKS ON A METALLIC BINDER  
CONSISTED OF: NA SUB2 HPO SUB4 10-15, NA SUB2 CO SUB3 5-7, AND WATER  
78-85PERCENT. FACILITY: SPECIAL DESIGN TECHNOLOGICAL BUREAU OF  
INVENTIONS OF THE COUNCIL OF MINISTERS, U.S.S.R.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--COMPLEXES OF MALONONITRILE WITH CUPROUS CHLORIDE -U-  
AUTHOR--(04)-SMIRNOV, S.K., STRUKOV, O.G., DUBOV, S.S., DANILINA, L.L.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM, 1970, 15(5), 1305-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY  
TOPIC TAGS--COPPER COMPLEX, NITROGEN ISOTOPE, ORGANIC NITRILE COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3007/0702 STEP NO--UR/0078/70/015/005/1305/1307  
CIRC ACCESSION NO--AP0136141  
UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AP0136141  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREPN. AND STUDY OF NCCH SUB2  
CN.CUCL, CUCL. PRIME15 NCCH SUB2 C PRIME15 N.CUCL, AND NCCH SUB2 C  
PRIME15 N.CUCL REVEALED THAT ON COORDINATION PRIME15 N IS A BETTER DONOR  
ATOM THAN PRIME14 N.

UNCLASSIFIED



1/2 019 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--POLAROGRAPHIC DETERMINATION OF TUNGSTEN IN STEELS -U-  
AUTHOR--(02)-POLOTEENOVA, N.A., DANILINA, L.M.  
COUNTRY OF INFO--USSR  
SOURCE--ZAVOD. LAB. 1970, 36(3), 261-3  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--TUNGSTEN STEEL, POLAROGRAPHIC ANALYSIS, METAL CHEMICAL  
ANALYSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0431 STEP NO--UR/0032/70/036/003/0261/0263  
CIRC ACCESSION NO--AP0126184  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126184

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO PREP. THE CALIBRATION CURVE, TO ALIQUOTS OF STD. NA SUB2 WO SUB4 SOLN. (2 MG W-ML), ADD 2 ML 1PERCENT NAVO SUB3 AND 0.5 ML H SUB3 PO SUB4. DIL. WITH H SUB2 O TO 5 ML AND HEAT TO BOILING. AFTER 20 MIN ADD 5 ML 1:4 H SUB2 SO SUB4 AND EXT. TWICE WITH 10 ML AMYL ALC. ADD 0.7 ML OF H SUB2 SO SUB4 TO THE COMBINED EXTS. AND DIL. TO 25 ML WITH AMYL ALC. DEAERATE 10 ML OF THIS SOLN. WITH H FOR 30 MIN AND SCAN THE POLAROGRAPHIC WAVE (E SUBONE HALF EQUALS MINUS 0.52 V VS. SCE) DISSOLVE 0.2-0.3 G OF STEEL CONTG. 6-10PERCENT W IN 5 ML H SUB2 SO SUB4 (1:4), 3 ML H SUB3 PO SUB4, AND 3 ML HNO SUB3. HEAT TO COMPLETE EVAPN. OF SO SUB3. COOL AND DIL. TO 25 ML WITH H SUB2 O. TO 5 ML OF THIS SOLN., ADD 2 ML NAVO SUB3 SOLN. AND HEAT TO BOILING. LEAVE STAND FOR 20 MIN, THEN EXT. WITH AMYL ALC. AS DESCRIBED ABOVE. DISSOLVE 0.4-0.5 G OF STEEL CONTG. 2-3PERCENT W IN 20 ML 1:4 H SUB2 SO SUB4, 3 ML H SUB3 PO SUB4, AND 3 ML HNO SUB3. PROCEED AS DESCRIBED ABOVE. THE ERROR IS 3.3PERCENT; THE ANAL. TAKES 1.5-2 HR. FACILITY: KISHINEV. GOS. UNIV., KISHINEV, USSR.

UNCLASSIFIED

USSR

DANILINA, N. I.

"One Algorithm for Determination of the Global Extreme"

Tr. Most. Ekon.-stat. In-ta. [Works of Moscow Institute of Economics and Statistics], No 4, Part 1, 1971, pp 131-133, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V422).

NO ABSTRACT.

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USSR

UDC 669.28.5.849.1.018.44.620.186

PIKUNOV, M. V., DANILINA, T. B., MEL'NIKOVA, L. V., DESIPRI, A. I.

"Investigation of the Structure and Certain Properties of Alloys Based on the Molybdenum-Rhenium System"

Nauchn. Tr. N-i. i Projektn. In-t Redkomet. Prom-sti [Scientific Works of Scientific Research and Planning Institute for the Rare Metals Industry], 1971, Vol. 32, pp. 22-28. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I718 by the authors).

Translation: The metallographic structure of the alloy Mo-50% Re-50% Fe, produced in an arc furnace with a nonconsumable electrode, is studied in detail. A method of preparation of sections and etching conditions are developed for this purpose. It is demonstrated that this alloy, depending on the conditions of heat treatment, may be either a one- or a two-phase alloy with the corresponding changes in properties. Physical heterogeneity of ingots is detected, related to the conditions of solidification and manifested as sharp differences in dendritic structure. This heterogeneity causes differences in hardness in various sectors of the ingot. The possibility of deformation of the alloy by hot pressing and impact upsetting is studied. 3 figs; 4 tables, 5 biblio refs.

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USSR

UDC: 621.396.6-181.5

VOROB'YEV, G. A., DANILINA, T. I.

"Production of Dielectric Films in a Low-Voltage Penning Discharge and Their Investigation"

Elektron. tekhnika. Nauchno-tekhn. sb. Unr. kachestvom i standartiz. (Electronic Technology. Scientific and Technical Collection. Quality Control and Standardization), 1970, vyp. 5, pp 85-89 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2V304)

Translation: The paper is devoted to the production and investigation of SiO<sub>2</sub> films. The films were produced by using the method of reactive cathode vaporization in a Penning discharge (a system of two opposed block electrodes -- the cathodes -- and an anode in a magnetic field). Graphs are presented for the rate of film deposition as a function of discharge power, and for the dielectric parameters of the film and capacitors made on the basis of the film as a function of conditions of vaporization, and also for the results of a study of the film structure. MgO, TiO<sub>2</sub> and PbO films were also studied. It is shown that the described method can also be used successfully for making capacitors based on SiO<sub>2</sub>, SiO<sub>2</sub>+PbO, and MgO films. Eight illustrations, one table, bibliography of four titles. N. S.

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USSR

UDC 621.3.049.75

DANILINA, T. I., IVANOVA, Ye. V., Tomsk Institute of Radio Electronics and  
Electronic Technology

"A Device for Atomizing Dielectric Films"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obrabotsy, tovarnyye znaki,  
No 11, Apr 71, Author's Certificate No 299044, division H, filed 17 May 69,  
published 16 Mar 71, p 194

Translation: This Author's Certificate introduces a device for atomizing  
dielectric films which contains a gas-discharge chamber equipped with an  
anode, cold cathodes, a magnetic system and a substrate holder. As a dis-  
tinguishing feature of the patent, the quality of the vaporized films is  
improved by making the anode in the form of a  $\Pi$ , while the substrate holder  
is made from a dielectric and is located under the anode outside of the  
gas-discharge region.

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1/2 022 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--SURFACE HARDENING OF MALLEABLE CAST IRON -U-

AUTHOR--(03)-SHAPIRO, A.A., FROLOV, S.F., DANILINA, V.S.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, (1), 36-7

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CAST IRON, SURFACE HARDENING, ALLOY COMPOSITION, FATIGUE  
STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1996/1741

STEP NO--UR/0128/70/000/001/0036/0037

CIRC ACCESSION NO--AP0118719

UNCLASSIFIED

2/2 022  
CIRC ACCESSION NO--AP0118719

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TITLE SPECIMENS FROM 3 INDUSTRIAL  
MELTS (C 2.77-2.88, SI 1.07-1.37, MN 0.45-0.60, S 1.48-1.89, P  
0.21-0.25, CR 0.06, AND NI 0.10-0.12 WT. PERCENT) WERE HARDENED ON THE  
SURFACE BY MEANS OF A HIGH FREQUENCY CURRENT. ALL SPECIMENS HAD  
INTERNAL TANGENTIAL COMPRESSION STRESSES AT 0.6-0.8 MM FROM THE SURFACE  
WITH THE MAX. AT THE SURFACE OF 22-5 KG-MM PRIME<sup>2</sup>. THESE STRESSES  
INCREASED THE ULTIMATE FATIGUE STRENGTH. WITH INCREASED AMT. OF FERRITE  
IN THE MATRIX (20-50 AND UP TO 100PERCENT) THE ULTIMATE FATIGUE STRENGTH  
INCREASED BY 20-35 AND UP TO 40PERCENT, RESP. THE INCREASED HOLDING  
TIME DURING NORMALIZING HAD THE FOLLOWING EFFECT: AFTER 15 MIN THE  
ULTIMATE FATIGUE STRENGTH INCREASED BY 48 PERCENT, AFTER 25 MIN, IT  
INCREASED BY 57PERCENT. THE OPTIMAL HEAT TREATMENT CONDITIONS WERE HIGH  
FREQUENCY CURRENT HARDENING WITH TEMPERING AT 300DEGREES.

UNCLASSIFIED



1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--ACUTE RENAL INSUFFICIENCY DURING ACUTE GLOMERULONEPHRITIS IN  
CHILDREN AND ITS TREATMENT WITH HEMODIALYSIS -U-  
AUTHOR--(05)-SOROKINA, M.I., BAYANDINA, S.A., DANILINA, Z.A., LOKSHIN,  
A.M., VERKHOVSKIY, B.D.  
COUNTRY OF INFO--USSR  
SOURCE--PEDIATRIYA 49(2): 26-30. 1970.  
DATE PUBLISHED-----70 -  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--KIDNEY FUNCTION, DIALYSIS, BLOOD, NEPHRITIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605015/B10 STEP NO--UR/0546/70/049/002/0026/0030  
CIRC ACCESSION NO--AP0140558

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140558

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO FIND OUT THE MAIN CRITERIA OF ACUTE RENAL INSUFFICIENCY IN ACUTE GLOMERULONEPHRITIS IN CHILDREN, AN ANALYSIS WAS MADE OF THE TREATMENT OF 10 PATIENTS, 7 OF WHOM WERE SUBJECTED TO 15 COURSES OF HEMODIALYSIS. SIX PATIENTS RECOVERED, IN 1 CASE THE DISEASE BECAME CHRONIC, 3 PATIENTS DIED. ACUTE RENAL INSUFFICIENCY IN ACUTE GLOMERULONEPHRITIS WAS CHARACTERIZED BY OLIGO-ANURIA WITH HYPOSISTENURIA, THREATENING HYPERPOTASSEMIA AND AZOTEMIA, DECOMPENSATED METABOLIC ACIDOSIS AND HYPERHYDRATION. WHEN DETECTING THE SYMPTOMATICS OF ACUTE RENAL INSUFFICIENCY, PATIENTS SHOULD BE TRANSFERRED TO SPECIALIZED NEPHROLOGICAL DEPARTMENTS WHERE HEMODIALYSIS CAN BE DONE IF REQUIRED. FACILITY: I. M. SECHENOV 1ST MOSCOW MED. INST., MOSCOW, USSR.

UNCLASSIFIED

Thermodynamics

USSR

UDC: [537.226+537.311.33]:[537+535]

DANIL'KEVICH, M. I. and LITVINOVICH, G. V.

"Investigating the Temperature Dependence of Nickel-Manganese-Zinc Ferrite Dielectric Permeability"

Vestn. Belorus. un-ta (Belorussian University Herald) 1971, series 1, No. 2, pp 62-67 (from RZh-Fizika, No. 11, 1971, Abstract No. 11E962)

Translation: The temperature dependence of the dielectric permeability and resistance of Ni-Mn-Zn ferrites with 22 different compositions is studied. A correlation between the activation energy of the conductivity and that of the polarization relaxation component and their effects on the dielectric permeability are found. The predominance of the effect of Mn and Ni ions on the change in electrical and dielectrical characteristics is detected in the thermal processing of the specimens.

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USSR

SHMALIY, G., Lt Col Med Serv, and DANILKIN, A., Capt Med Serv

"Rules of Hygiene for a Submarine Crew"

Moscow, Starshina Serzhant, No 12, Dec 70, p 36

Translation: Whereas in the past the duration of a ship's voyage has depended on its technical capabilities, it is now determined by the physical potentialities of man. These factors in turn depend to a great degree on the strict adherence by sailors to behavioral rules, including the rules of personal hygiene.

A few words about the physiological capacities of a submariner. Before a long autonomous voyage, a great deal of attention should be devoted to such sports as volleyball, basketball, football, gorodki (a kind of skittles), light athletics, and swimming. Such athletic games develop endurance and adroitness in submariners and greatly improve the functioning of their cardiovascular and respiratory systems and gastrointestinal tract.

In order to follow the rules of personal hygiene, every submariner should

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USSR

SHMALIY, G., and ~~DANIKLIN~~ DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36

be supplied with soap, a toothbrush, and toothpaste before a long voyage. It is also recommended that he have toilet water (preferably odorless) and a mouthwash.

During a long voyage, skin cleanliness is of primary importance. Skin diseases are prevented by regularly washing the hands, face, and feet with soap and water and sponging the body with ethyl alcohol diluted to 60-70°C or with cologne. Ethyl alcohol and cologne are good for cleansing the skin of oils and diesel fuel, as well as grease and perspiration secreted by the skin. Special attention to skin hygiene should be paid by cooks, orderlies, and galley personnel.

Negligence on the part of some sailors toward prophylactic measures can result in boils, epidermophytosis, and sweating between the toes. Thus, for example, seaman Gushchin, a winch operator, failed to follow the basic rules of skin care, for several days. As a result he contracted epidermophytosis, first of the feet and then of both hands, and later developed boils over his body. These diseases could easily have been prevented, but

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USSR

SHMALIY, G., and DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36

seaman Gushchin became disabled as a result of his slovenliness. The submarine doctor spent a great deal of time in restoring Gushchin's health.

Regular changing of one's underwear and bedding is very important. Underwear and bedding fabrics absorb perspiration and are soiled with oils and diesel fuels, lowering their sanitary properties. It is a known fact that after a week's wear in a submarine environment the weight of work clothes increases by 10%, that of socks by 25%, and that of underwear by 40-50%. With microtraumas of the skin, soiled fabric produces pustular diseases. It is therefore recommended that submariners change their underwear and bedding more often than normal, especially while at sea in the tropics.

For prevention of dental diseases, we regard oral sanitation prior to going to sea as very important. As a rule, submariners leave for long voyages with healthy teeth. During the voyage every member of the crew must brush his teeth twice a day, morning and night. According to our observations a toothpaste of the Pomorin type and a mouthwash have a good effect on the condition of the teeth and oral cavity.

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USSR

SHMALIY, G., and DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36

Of special importance during an extended voyage is the prevention of gastrointestinal diseases. Infectious diseases such as dysentery, typhoid fever, and enteritis are very dangerous for the submarine crew. These diseases are mainly transmitted through dirty hands. Therefore, hands should always be clean and nails short. The washing of hands before every meal and after the use of cleaning of toilet facilities is a must. At any sign of a gastrointestinal tract disorder, a submariner must immediately report to the ship's doctor.

Noncontagious diseases of the gastrointestinal tract are gastritis, hemorrhoids, and frequent constipation. To prevent these diseases among submariners, special attention must be devoted to proper planning of the daily food intake, menu planning, control over the quality and storage of food products, and preparation of meals. Gastritis, hemorrhoids, and constipation are caused by lack of exercise, diet monotony, an insufficient quantity of vegetable dishes, and the body's loss of a large amount of water through perspiration.

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USSR

SHMALIY, G., and DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36

Physical exercise -- sit-ups, raising and lowering the legs while lying on the deck, exercise with dumbbells and springs, push-ups from the deck, and others, -- makes it possible to eliminate these diseases. None of the above-mentioned noncontagious diseases of the gastrointestinal tract were observed by us among submariners who had systematically performed these exercises during a long voyage. Chief Kol, who had regularly performed physical exercises and never once complained of decreased appetite, stomach pain, constipation, or fatigue, may serve as an example.

During long voyages food poisoning can occur. Its cause is mostly spoiled products, especially canned ones, as well as pustular diseases of the skin among the galley crew. Every crew member must remember that food prepared aboard a submarine cannot be kept for over an hour. Once opened canned goods cannot be kept for any length of time. No products from bulging cans can be used for food. At the first signs of food poisoning such as nausea, headache, vomiting, stomach pains, or diarrhea, one must immediately report to the ship's doctor.

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USSR

SHMALIY, G., and DANIKLIN, A., Starshina Serzhant, No 12, Dec 70, p 36

A few words about smoking. It is known that while submerged, submariners go for a long period without smoking. The body gradually loses the nicotine habit. Upon surfacing, smokers resume smoking, and develop mild nausea, dizziness, tickling of the throat, increased pulse rate, and tachycardia. It has been noted that efficiency is higher among nonsmokers than among smokers; the nonsmokers are calmer, more alert when standing watch, and have a better appetite. Hence the conclusion that a nonsmoker endures long underwater voyages much more easily.

A submariner's duty is not easy. Every crew member must therefore fulfill absolutely all the demands of the medics; that is, follow strictly the rules of personal hygiene, systematically perform physical exercises, and develop his strength and endurance.

Every submariner must at all times be ready to perform the most complex military task.

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USSR

UDC: 533.9...16

DANILKIN, I. S.

"Effect of Geometric Errors in a Magnetic System on the Topology of a Stellarator Field"

Tr. Fiz. in-ta AN SSSR (Works of the Physics Institute, Academy of Sciences of the USSR), 1973, 65, pp 26-49 (from RZh-Fizika, No 6, Jun 73, abstract No 6G354)

Translation: The paper gives a systematic presentation of the problem of the effect of perturbations of the geometric parameters of the magnetic system of a stellarator on the topology of its field. The roughest and most dangerous possible geometric distortions are shown, and the necessary tolerances are evaluated. It is shown, in particular, that in the case of the principal resonance in the axial region, due to relative misalignment of the longitudinal and helical fields of the order of  $10^{-3}$ , the shift in the magnetic axis of the system may reach a magnitude of the order of the transverse dimension of the magnetic field aperture being used. This demands careful adjustment of the magnetic system or the use of a special system to compensate for the effect of perturbations. Bibliography of 11 titles.

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Acc. Nr.

AP0045176

Abstracting Service:  
CHEMICAL ABST.

5-70

Ref. Code

UR0191

91064z Rheological properties of thermosetting plastics studied on a rotational plastometer. Danilkin, N. N. Kanavets, I. F. (USSR). Plast. Massy 1970, (1), 29-31 (Russ). The rheological properties of molding materials K-214-2 and K-18-2 were studied by means of a Kanavets plastometer at shear rate ( $\dot{\gamma}$ ) of  $10^{-2}$ - $10^2$  sec $^{-1}$  at 300-50 kg/cm $^2$  pressure. Increased deformation rate led to higher rigidity and viscous flow resistance. The max. shear strength ( $\sigma$ ) of K-18-2 and K-214-2 were measured as a function of  $\dot{\gamma}$ . At high enough  $\dot{\gamma}$ , the shear stress was inversely proportional to  $\dot{\gamma}$ , presumably due to increased polycondensation rates which led to higher viscosity and subsequently to degradation.

CKJR

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REEL/FRAME

19780076

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USSR

UDC 620.193.01:669.29

TSODIKOV, V. V., DANILKIN, V. A., YAKIMENKO, L. M., MALKINA, R. I., and  
MELESHKINA, YE. P.

"Hydrogenation of Titanium and Platinized Titanium With Cathode Polarization in  
an Alkaline Medium"

Moscow, Zashchita Metallov, No 4, 1972, pp 446-448.

Abstract: The authors studied the influence of platinum, galvanically deposited on the surface of titanium, the duration of cathode polarization, current density, the presence of potassium bichromate in the solution on the quantity of hydrogen absorbed during cathode polarization. The electrolyte consisted of potassium carbonate and potassium hydroxide. The results indicated that hydrogenation of platinized titanium increases with time according to a parabolic curve. The influence of the platinum layer decreases with the passage of time. The presence of bichromate in the solution decreased the hydrogenation of titanium, with and without the platinum layer. The bichromate probably reacts with the hydrogen on the surface of the electrode, without separation of chromium. When platinized titanium is stored in air, or particularly in the carbonate-alkaline solution being studied, hydrogen content drops rather sharply with the current off.

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UDC 669.71.41

USSR

PIMENOV, Yu. P., DANILKIN, V. A., DEMENKOV, A. I.

"Sampler for Taking of Sample From Aluminum Melts for Determination of Hydrogen Content by Vacuum Extraction Methods"

Tekhnol. Legkikh Splavov. Nauchno-Tekhn. Byul. VILSa [The Technology of Light Alloys, Scientific and Technical Bulletin of the All-Union Institute of Light Alloys], 1970, No. 6, pp. 94-97. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G168 by S. Krivonosova).

Translation: It is recommended that the copper mold be replaced by a sampler, allowing samples to be taken directly from the melt bath without significant disruption of the oxide cover, with high accuracy of sampling point ( $\approx 15$  mm), production of a specimen ready for lathe processing, and more complete fixation of  $H_2$  in the specimen. A rubber bulb is used to create rarefaction in the sampler. A quartz tube is then placed in the melt and the metal is drawn up into the cylindrical channel of a copper body, in which it crystallizes rapidly. The sampler has been used to produce specimens, the gas content of which corresponded to the solubility of  $H_2$  in liquid Al at the sampling temperature with a partial pressure  $P_{H_2}=1$  atm. The theoretically limiting concentration of  $H_2$  was determined in the Al. 2 figs, 2 tables.

1/1

USSR

UDC 669.71.042.6

DANILKIN, V. A., ESKIN, G. I., BOROVIKOVA, S. I.

"Study of the Process of Formation of the Ingot Structure of Aluminum and Its Alloys under the Effect of Ultrasonic Treatment in the Crystallization Process"

Tekhnol. legkikh splavov. Nauchno-tekhn. byul. VILSa (Light Alloy Technology. Scientific and Technical Bulletin of the VILS), 1970, No 5, pp 135-136 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G181)

Translation: The quantitative relation between the ultrasonic treatment parameters, the chemical composition of the aluminum, and the intensity of development of cavitation in the melt with refinement of the aluminum grain size was studied more precisely to define the ultrasonic treatment parameters to obtain fine grained structure in aluminum alloys under laboratory conditions and on an experimental industrial unit. The optimal conditions of ultrasonic treatment of aluminum and its binary alloys with Zn, Mn, Zr, and Si are defined.

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USSR

UDC 669.715:66.065.51:621.9.048.6

ESKIN, G. I., ~~DANILKIN, V. A.~~ SHVETSOV, P. N., and BOROVIKOVA, S. I., All-Union Institute of Light Alloys

"Influence of Ultrasonic Treatment on the Crystallization Process of Aluminum and Its Alloys"

V sb. Modifitsir. siluminov (Modification of Silumins -- Collection of Works), Kiev, 1970, pp 148-157 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 I742 by O. PIMENOVA)

Translation: Results are presented of experiments involving ultrasonic treatment of crystallized ingots of aluminum and alloys (Al-Mn, Al-Mg, Al-Cu-Mn-Zr, Al-Cu-Mn-Mg-Si, etc.) during continuous casting in a water-cooled crystallizer. The authors determined the shrinkage, hydrogen content, structure, chemical composition, and mechanical properties of the ingots. With ultrasonic treatment, uniform size reduction of macrograin over the entire ingot cross section can be obtained. The effectiveness of modifying additives (Ti, Zr, etc.) rises, and the hydrogen content of ingots declines 2-3 times. Apart from a 10 to 15% increase in strength and plasticity characteristics, ultrasonic treatment makes it possible to equalize properties over the cross section, which is of the greatest practical importance. Seven illustrations. One table. Bibliography of 13 titles.

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USSR

UDC 621.3.-035.3:666.31.537.311.3

KUDRYAVTSEV, L. A., DMITRIYEVA, L. M., PEDOROV, A. P., and DANILKIN, V. I.

"Some Properties of Ceramic Ion Exchange Membranes"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 45, No 1, Jan 72, pp 30-33

**Abstract:** A study was carried out on the utilization of ceramic membranes with ionic conductivity in vacuum electrochemical processes. These materials were found to exhibit high mechanical strength as well as thermal and chemical stability. Ceramic membranes which exhibit ionic conductivity are based on solid porcelain to which minerals and granite pegmatites containing alkaline oxides were added: a) porcelain mass - spodumene with lithium conductivity; b) porcelain mass - synnirite with potassium conductivity; and c) porcelain mass - granite pegmatites with sodium conductivity. In spite of the fact that ceramic materials (with higher content of alkaline oxides) exhibit lower electroconductivity than glasses, they can be used in electrochemical processes, especially at elevated temperatures where the use of glass is very limited. Ionic transport across the ceramic membranes obeys the Ohm law, its function against the voltage plot is linear.

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USSR

UDC 669.882/.884.053.28(638.8)

LEONOV, I. P., and DANILKIN, Y. I., State Institute of Applied Chemistry

"Method of Producing Alkali Metals"

USSR Author's Certificate No 216951, filed 23 Apr 65, published 11 Mar 70.  
(from *RZh-Metallurgiya*, No 11, Nov 70, Abstract No 11 G141 P)

Translation: A method is proposed for producing alkali metals by reducing their chlorides in vacuum. To increase the metal yield and raise its purity, the intermetallic compound  $\text{CaMg}_2$  is used as the reducing agent.

1/1

1/2 016 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--CARBENE CHEMISTRY -U-  
AUTHOR--(05)-DANILKINA, L.P., KOMENDANTOV, M.I., KOSTIKOV, R.R.,  
MANDELSHTAM, T.V., RAZIN, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--VESTN. LENINGRAD. UNIV., FIZ., KHIM. 1970, (1), 123-43  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL BONDING, MOLECULAR STRUCTURE, CHEMICAL REACTION  
MECHANISM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3008/1736 STEP NO--UR/0054/70/000/001/0123/0143  
CIRC ACCESSION NO--AP0138709  
UNCLASSIFIED

2/2 016  
CIRC ACCESSION NO--AP0138709

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW OF THE STRUCTURE,  
REACTIVITY, AND REACTION MECHANISMS OF CARBENES WITH COMPS. CONTG.  
MULTIPLE BONDS, WITH SPECIAL REF. TO THE WORK OF I. A. DYAKONOV WITH 160  
REFS.

UNCLASSIFIED

USSR

VANFUCH, Yu. I., DANILONKO, V. N.

"Efficiency of Steel Beyond Elasticity Limit Under Repeated Loadings"

Seysmostoyk. Str-vo i Stroyit. Materialy [Earthquake-resistant Structures and Construction Materials -- Collection of Works], Ashkhabad. Ylym Press, 1972, pp 39-43, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 V1266 by A. P. Gusenkov).

Translation: Individual experiments are performed with repeated loading on type A-1 reinforcing steel. Tests involved extension to rupture with 1-, 2-, 30, 40, 5- and 10-times unloading. It was shown that unloading does not influence the deformation diagram or strength and plasticity characteristics. A number of specimens were also tested in extension-compression with a loading cycle providing approximate equality of areas of hysteresis loop in the direction of extension and the direction of compression. The work of cyclical rupture is estimated, and the quasi-static nature of rupture of specimens at the selected cyclical loading levels is noted.

1/1

Acc. Nr.: AP 0042364Ref. Code: UR 0203

JPRS 50162

Angular Dimensions of Solar Corpuscular Streams

(Abstract: "Angular Dimensions of Solar Corpuscular Streams," by ~~A. A. Danilov~~ and I. Ya. Plotnikov, Institute of Space Physics Research and Aeronomy, Yakutsk Affiliate Siberian Department Academy of Sciences USSR; Moscow. Geomagnetizm i Aeronomiya. Vol X, No 1, 1970, pp 134-136)

Geomagnetic activity has semiannual variations with a maximum near the equinox and a minimum near the solstices. This phenomenon is related to the fact that the intensity of solar corpuscular radiation in the equatorial plane is less than over the latitudes of zones of spot formation. A semiannual wave of magnetic activity arises as a result of change in the annual value  $\Delta\varphi = \varphi_a - \varphi_E$ , where  $\varphi_a$  is the heliolatitude of the zone of spot formation,  $\varphi_E$  is the earth's heliolatitude. With the 11-year cycle  $\varphi_a$  varies in the range  $\pm 8-35^\circ$  and therefore the same change should be characteristic of the semiannual wave of magnetic activity. This makes it possible to investigate the geometric dimensions of solar corpuscular streams. The initial material for the analysis was the three-hour K-indices for the Yakutsk Observatory for 1938-1965, that is, for almost three solar cycles. (Nonlinearity of the scale of the K-index is unimportant since it

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is only necessary to find the minimum of the semiannual wave in the 11-year cycle.) Computations presented here indicate that the mean angular dimension of a solar corpuscular stream is about 30°. In the cross section the stream is circular or elliptical.

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1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--CHARACTERISTICS OF HEMODYNAMIC CHANGES IN COMBINED RHEUMATIC MITRAL  
STENOSIS IN AGED AND SENILE PATIENTS -U-  
AUTHOR--DANILOV, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--KARDIOLOGIYA 10(1): 74-78, 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--GERIATRICS, HEART DISEASE, HEMODYNAMICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/0550 STEP NO--UR/0495/70/010/001/0074/0078  
CIRC ACCESSION NO--AP0131173  
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131173  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. IN HEALTHY PERSONS OVER 50 YR OLD THE CARDIAC OUTPUT AND INDEX TEND TO DECLINE. IN AGED AND SENILE PATIENTS WITH MITRAL DISEASE OF THE HEART WITH INCREASE OF THE DEGREE OF CIRCULATORY INSUFFICIENCY THE CARDIAC OUTPUT AND INDEX DECREASE MORE MARKEDLY IN COMPARISON WITH THE CONTROL GROUP. SOME CLINICAL ASPECTS OF COMBINED MITRAL DISEASE OF THE HEART IN AGED PATIENTS ARE DISCUSSED. IN THE MAJORITY OF PATIENTS THE DEVELOPING CIRCULATORY INSUFFICIENCY IS RELATIVELY DIFFICULT TO TREAT; HOWEVER, THERE WAS A GROUP OF 11 PATIENTS OF PENSION AGE SUFFERING FROM I AND II-A STAGES OF CIRCULATORY INSUFFICIENCY WHO CONTINUED TO WORK. FACILITY: A. L. MYASNIKOV INST. CARDIOL., ACAD. MED. SCI, USSR, MOSCOW, USSR.

UNCLASSIFIED



1/2 018 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--INTERNATIONAL SUMMER SCHOOL ON IONOSPHERIC PHYSICS -U-  
AUTHOR--(02)--DANILOV, A.D., YUDOVICH, L.A.  
COUNTRY OF INFO--USSR 0  
SOURCE--MOSCOW, GEOMAGNETIZM I AERONUMIYA, VOL X, NO 2, 1970, P 380  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--ATMOSPHERIC SCIENCES, BEHAVIORAL AND SOCIAL SCIENCES  
TOPIC TAGS--IONSOPHERIC P YSICS, AERONOMY, UPPER ATMOSPHERE, CHARGED  
PARTICLE  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1994/0388 STEP NO--UR/0203/70/010/002/0380/0380  
CIRC ACCESSION NO--AP0114677  
UNCLASSIFIED

Z/2 018

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0114677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN INTERNATIONAL SUMMER SCHOOL ON IONOSPHERIC PHYSICS WAS HELD AT SOCHI DURING THE PERIOD 3-16 SEPTEMBER 1969. THE SCHOOL WAS ATTENDED BY REPRESENTATIVES OF THE SOVIET UNION AND THE SOCIALIST COUNTRIES. OUTSTANDING SPECIALISTS IN THE FIELDS OF EXPERIMENTAL AND THEORETICAL IONOSPHERIC RESEARCH PRESENTED LECTURES. A. D. DANILOV GAVE A REVIEW OF CURRENT PROBLEMS IN AERONOMY, INCLUDING ATMOSPHERIC COMPOSITION, CHEMICAL REACTIONS AND INTERACTION OF RADIATION PROCESSES WITH THE UPPER LAYERS OF THE ATMOSPHERE. G. S. KVANON-KHOLODNYI GAVE A REVIEW OF EXPERIMENTAL DATA ON VERTICAL DISTRIBUTION, TIME OF DAY, SEASON, AND SOLAR ACTIVITY FOR ION COMPOSITION, TEMPERATURE AND EFFECTIVE RECOMBINATION COEFFICIENT. V. M. POLYAKOV PRESENTED A DETAILED EXAMINATION OF TRANSFER PROCESSES WHICH ON A GLOBAL SCALE AFFECT THE IONOSPHERIC DISTRIBUTION OF CHARGED PARTICLES.

UNCLASSIFIED

USSR

UDC 615.215.5:546.391.07

KHROMOV-BORISOV, N. V., INGENBOM, M. L. and DANILOV, A. F.; Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad

"Bis-Quaternary-Ammonium Curariform Compounds with Rigid Molecular Structure"  
Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 5, No 9, 1971, pp 3-7

Abstract: It has been presumed, in the case of the bis-quaternary-ammonium compounds, which exhibit the highest curariform action, that the anion positions in the cholinergic receptors of the skeletal muscles are situated at distances of 14-15 Å apart and also at distances of 20-22 Å (the so-called C-10 and C-16 structures, respectively); but this has not been verified in the case of structure C-16. The authors synthesized two series of alkaloids -- derivatives of naphthalene-paritetetracarboxylic and pyromellitic acids, which they subjected to chemico-physical and biological tests. All compounds synthesized had rigid molecular structure and near-optimal inter-N distances. Basic physico-chemical data, including structural formulas, were obtained.

All the compounds were powerful muscle relaxants, all except one (of the n.-p. t. group) being more effective than d-tubocurarine; but the pyromellitic acid derivatives were only 3-16.5% as effective as the other group, probably owing to their shorter inter-N distance. With substitution of ethyl for methyl

USSR

KHROMOV-BORISOV, N. V., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 5,  
No 9, 1971, pp 3-7

radicals in the cation groups, physiological activity was definitely increased  
in both groups of compounds tested. The C-16 structure was considered verified  
by the tests.

2/2

DANILOV, A.I.

medicine/virology

SO: JPRS 53272  
02 JUNE 71

UDC: 576.858-001.5(47)"1969-1970"

PRINCIPAL RESULTS OF SCIENTIFIC INVESTIGATIONS IN 1969-1970 ON A PROBLEM OF NATIONAL IMPORTANCE: GENERAL VIROLOGY

Medicine/Virology

Article by O.P. Peterson, A.I. Danilov, Ye.N. Kucharskikh, Moscow; Moscow, Vestnik Akademi Meditsinskikh Nauk SSSR, Russian, No 6, April 1971, pp 81-86]

In our country 22 scientific institutions are involved in development of the problem of "general virology." In this survey we discuss a number of works performed in 1969 and in the first quarter of 1970.

Greatest advances were made in the study of synthesis of viral particles and components thereof. Work in this field was done on a high, modern methodological level and resulted in a series of acquired data. For example, at the Institute of Virology USSR ANS (Academy of Medical Sciences) replicative forms of RNA were discovered and investigated, which are formed upon reproduction of three viruses: Sendai, Newcastle disease, and Venezuelan encephalomyelitis. These data constitute a substantial supplement to the hypothesis of universality of the process of formation of double-stranded and multistranded intermediate forms of RNA upon replication of animal virus RNA.

There were some unique investigations dealing with the coding function of viral genetic material in Sendai parainfluenza virus. It was demonstrated that viral ribonucleoprotein penetrates into the cell and in the cytoplasm it associates with polyomas and codes virus-specific proteins. These data were confirmed in experiments in an acellular system, in which a study was made of the coding properties of viral RNA and RNP. The results obtained disclose wide possibilities for solving a series of basic problems, in particular the problem of whether this phenomenon extends to other viruses, does the protein of ribonucleoprotein play a specific role in realization of information deposited in nucleic acid, and others.

Some interesting work was done with regard to investigation of virus-induced synthesis in the mitochondrial-microsomal fraction in an extracellular system (model: VEE arbovirus). It was demonstrated that this function, obtained from infected cells, which has a high level of RNA polymerase activity synthesizes in vitro RNA of both the cellular and viral type.

USSR

UDC 621.357.8.035.4:669.14(088.8)

SHTAN'KO, V. M., LIPKIN, Ya. N., NOVIKOV, V. G., VOLKOV, Yu. M., STRIZHAK, G. K., RABINOVICH, O. Ya., ZIMOVETS, V. G., ~~DANILOV, A. M.~~, MATVEYEV, Yu. M., MEDNIKOV, Yu. A.

"Electrolyte for Electrochemical Polishing of Products"

USSR Author's Certificate No 306186, Filed 28/10/69, Published 21/07/71, (Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No 3 L283 P from the Resume).

Translation: An electrolyte for electrochemical polishing of products, for example of stainless steel, differing in that in order to improve the quality of polishing and intensify the process, a foam suppressor is introduced to the electrolyte with the following relationship of components (in wt.%): orthophosphoric acid 30-70,  $H_2SO_4$  10-40,  $H_2O$  10-30 and above 100%. Surfactants based on peptide and polypeptide salts, 1-10 g/l, foam suppressor 0.001-1 g/l. Polymethylsiloxane liquid is used as the foam suppressor.

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- 31 -

1/2- 015  
UNCLASSIFIED  
PROCESSING DATE--13NOV70  
TITLE--USE OF A SIDE PRODUCT OF THE FERRO ALLOY INDUSTRY INSTEAD OF FERRO  
SILICON -U-  
AUTHOR--(03)--KATSAY, YE.V., KORNILOV, L.N., DANILOV, A.M.  
COUNTRY OF INFO--USSR  
SOURCE--METALLURG, JAN. 1970, (1), 25  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--FERROALLOY, FERROSILICON, CORUNDUM, TITANIUM STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1994/0147  
STEP NO--UR/0130/70/000/001/0025/0025  
CIRC ACCESSION NO--AP0114543  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0114543

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY OF USING SI AND TI  
CONTG. SIDE PRODUCTS FORMED IN THE PRODUCTION OF ELECTRO CORUNDUM  
INSTEAD OF ORDINARY FERRO-SI IN STEELMAKING IS DISCUSSED. THE QUALITY  
OF THE STEEL SO PRODUCED IS IN NO WAY INFERIOR TO THAT OBTAINED BY THE  
CONVENTIONAL TECHNIQUE, BUT THE TI CONTENT IS APPRECIABLY HIGHER (BY A  
FACTOR OF 2-4). THE USE OF THESE PRODUCTS IS PARTICULARLY RECOMMENDED  
IN THE PRODUCTION OF TI STEELS.

UNCLASSIFIED



DANILOV B.S.

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TECHNICAL TRANSLATION

Page 1 ESTC-INT 23-2015-72

29 Aug 72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION  
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV,  
SEPTEMBER 1968

FOREIGN TITLE: ПРОБЛЕМЫ ПЕРЕДАЧИ ИНФОРМАЦИИ ЛАЗЕРНЫМ ИЗЛУЧЕНИЕМ

AUTHOR: I. A. DERUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY  
MENT T.G. SCHEGARENKO

Translated for FSTC by ACS1

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10/11/72 Page 1

DANILOV, F.

*pipe rolling*

# Adaptive System Announced for Pipe Production

Academician V. Trapeznikov  
Director of the Institute of Control Problems  
USSR Academy of Sciences

F. Danilov  
Director of the First Unit New Pipe Rolling  
USSR Academy of Sciences

... Very complex problems have been solved in automating control of nuclear power installations and various technological and industrial processes.

The problem facing scientists working in this area are becoming more complicated every day. Among them is the control of various and numerous sets of machines with different characteristics. According to detailed study and mathematical analysis of such devices, their control cannot be transferred to "regular" automation. It is necessary that the "electronic manager" keep abreast of indices that change in the process of operation. Here, so-called adaptive systems, which are "able" to adapt to changing conditions or to teach themselves, are called upon for help.

An example of a complex unit in which the principles of self-learning, developed at the Institute of Control Problems, are applied can be found in pipe-rolling production of the First Unit New Pipe Plant. The plant produces hundreds of thousands of tons of seamless pipe annually from high-alloy steel.

The pipe-rolling unit consists of three interconnected mills (heating, rolling, and calibration), operating synchronously with two heating furnaces. Several dozen factors affect the quality of the pipe (temperature of the steel, its length and diameter, distance between rolls, transport time between the mills, elastic deformation, etc.). The indices for each mill change in the course of its operation—e.g., the rolls, lines, and mandrels become worn. All this greatly complicates control of the unit, and workers are unable to meet the stringent requirements of the tolerances permitted in the use of the pipes without the aid of automation. What is required is rapid and precise measurement of hot pipes moving at a speed of several meters/sec, and instantaneous adjustment of the operation of the complex devices.

However, what is difficult for people is simple for an automatic self-learning system. What is this system? Let us imagine that a new manager comes to the plant. First, he must learn about the production. In the process of learning, he mentally composes a "model" of the enterprise, which comprises the production units and the people and their interaction, also taking into consideration other information. Only after such examination, is it possible, on the basis of the mental "model," to begin to manage the enterprise. But having taken the reins in his hand, the director continues to "learn," becomes more closely acquainted with

Translation of report of the article, "By Command from the Computer," "Problemy EVM", in the newspaper Pravda, July 21, 1971, p. 3; translated from the Russian by Irina Agnew.

USSR

PRYAKHIN, V. K., Engineer, RAZINTSEV, V. I., Engineer, and DANILOV, F. M.,  
Candidate of Technical Sciences

"Investigation of the Stability of a Hydraulic Servo Motor With Direct  
Feedback"

Moscow, Izvestiya Vysshykh Uchebnykh Zavedeniy, Mashinostroyeniye, No 5, 1972,  
pp 77-80

Abstract: The method of harmonic linearization is used to study a loaded  
hydraulic servo motor with direct feedback. The conditions of stability of  
the servo motor are determined, with account taken of compressibility of the  
working fluid, as well as the parameters of the servomechanism and the load.  
8 references.

1/1

- 110 -

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--HIGH ENERGY SCATTERING MODEL WITH A VIOLATION OF THE POMERANCHUK  
THEOREM -U-  
AUTHOR-(04)-ANSELM, A.A., DANILOV, G.S., DYATLOV, I.T., LEVIN, YE.M.  
COUNTRY OF INFO--USSR  
SOURCE--YAD. FIZ. 1970, 11(4), 896-901  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--PARTICLE INTERACTION, ANTIPARTICLE, INTEGRAL CROSS SECTION,  
NUCLEAR MODEL, SCATTERING CROSS SECTION, ENERGY SPECTRUM, HIGH ENERGY  
PARTICLE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3007/1000 STEP NO--UR/0367/70/011/004/0896/0901  
CIRC ACCESSION NO--AP0136427  
UNCLASSIFIED

2/2 018


UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136427

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXAMPLES ARE PRESENTED FOR THE POSSIBLE VIOLATION OF THE THEORY OF THE EQUALITY OF THE TOTAL CROSS SECTION OF PARTICLE AND ANTIPARTICLE INTERACTIONS (I. YA. POMERANCHUK, 1958) IN MODELS BASED ON THE LOGARITHMIC DEPENDENCE OF THE INCREASE IN THE INTERACTION RADIUS WITH THE INCREASING ENERGY. THE EXAMPLES SATISFIED THE GENERAL PRINCIPLES OF THIS THEORY, I.E. THE ANALYTICITY, THE CROSSING SYMMETRY, AND UNITARITY. THE DIFFRACTIONAL MODELS WITH THE S CHANNEL PARTIAL WAVE AMPLITUDE EQUAL SIMILAR TO  $1 - \ln s$  AND THAT WITH THE TOTAL ABSORPTION AND CROSS SECTION  $\sigma_{\text{TOT}}$  SIMILAR TO  $\ln^2 s$  ARE DISCUSSED IN DETAIL. FACILITY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--SYNTHESIS OF A CLASS OF MATCHING NETWORKS -U-  
AUTHOR--(02)-DANILOV, L.V., DANILOV, G.V.   
COUNTRY OF INFO--USSR  
SOURCE--IZV. VUZ RADIOELEKTRONIKA (USSR), VOL. 13, NO. 1, P. 68-73, JAN.  
1970  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--FREQUENCY CHARACTERISTIC, FREQUENCY BAND, ELECTRIC NETWORK  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3007/1731 STEP NO--UR/0452/70/013/001/0068/0073  
CIRC ACCESSION NO--AP0136972  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136972

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSES THE FEASIBILITY OF DESIGNING REACTIVE MATCHING NETWORKS IN SUCH A WAY THAT THE REAL PART OF THE INPUT ADMITTANCE OF THE NETWORK, WHEN THE LATTER IS TERMINATED IN A LOAD WITH GIVEN FREQUENCY CHARACTERISTICS, BECOMES ALMOST CONSTANT OVER A REQUIRED FREQUENCY BAND. FORMULATION AND PROOF ARE GIVEN FOR A THEOREM WHICH STATES THAT THIS INSTANCE CAN BE SOLVED FOR ANY FREQUENCY BAND WIDTH, WITH ANY DESIRED ACCURACY.

UNCLASSIFIED



USSR

UDC: 621.376.5(088.8)

VILKOV, A. N., ~~DANILOV, I. N.~~, POPOV, V. K.

"A Pulse Modulator"

USSR Author's Certificate No 262166, filed 23 Mar 67, published 2 Jun 70  
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D463 P)

Translation: This Author's Certificate introduces a pulse modulator which contains a charging DC voltage source, an ionic commutator based on a thyatron, a video pulse train oscillator which generates signals to control operation of the commutator, and an accumulator in the form of an artificial line. To reduce the inverse voltage on the plate of the thyatron, and to improve operational reliability, the inductance of each cell of the artificial line is shunted by a resistor. V. P.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SOME DATA ON THE CHARACTERISTICS AND CLINICAL USE OF THE NON  
CITRATED DONOR PLASMA -U-  
AUTHOR--(04)--DOVGAEV, S.I., DANILOV, I.P., BUGLOV, YE.D., BUGLOVA, YA.F.  
COUNTRY OF INFO--USSR  
SOURCE--ZDRAVCOKHRANENIYE BELORUSSII, 1970, NR 4, PP 80-83  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BLOOD PLASMA, CALCIUM, PHOSPHATE, CELLULOSE, DONOR BLOOD,  
BLOOD COAGULATION, LIVER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3003/0133 STEP NO--UR/0477/70/000/004/0080/0083  
CIRC ACCESSION NO--AP0129389  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129389

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS HAVE SHOWN THAT IN THE NON CITRATED AND NATIVE PLASMA, OBTAINED FROM THE BLOOD, STABILIZED WITH THE HELP OF THE FIBRED SORBENT OF THE CALCIUM IONS, CELLULOSE PHOSPHATE (THE M-I PREPARATION) THE COAGULATION SYSTEM FACTORS HAVE BEEN BETTER PRESERVED. THE NON CITRATED PLASMA WITH ITS PHYSICO CHEMICAL AND CURATIVE PROPERTIES HAS FAVOURABLY DIFFERED FROM THE CITRATED ONE. DUE TO A LOWER REACTOGENESIS ITS USE IS PREFERRED IN CASES OF THE DISEASES ACCOMPANYING A LIVER AFFECTION. FACILITY: BELORUSSKIY N-I INSTITUT PERELIVANIYA KROVI AND I-YA KAFEDRA GOSPITAL'NOY TERAPII MINSK. MEDITSINSKUGO INSTITUTA.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--SPIRITUOUS METHOD OF SERUMAL POLYGLOBULIN OBTENTION -U-  
AUTHOR-(04)-DOVGALYEV, S.I., ~~DANILOV~~, I.P., DREKOV, G.A., KORNEYCHIK, V.S.  
COUNTRY OF INFO--USSR  
SOURCE--ZDRAVOOKHRANENIYE BELORUSSII, 1970, NR 2, PP 26-28  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--GAMMA GLOBULIN, DRUG PRODUCTION, HEMATOLOGY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1988/1655 STEP NO--UR/0477/70/000/002/0026/0028  
CIRC ACCESSION NO--AP0106401  
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0106401

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW SPIRITUOUS METHOD WAS  
OFFERED OF OBTAINING SERUMAL POLYGLOBULIN, DIFFERING FROM THE  
RIVANOLUOUS METHOD OF OBTAINING GAMMA GLOBULIN IN EXCLUDING THE  
BULKINESS OF MULTITUDE OF OPERATIONS; IT INCREASED THE APPARATUS OUTPUT.  
ITS PRODUCTION IS AVAILABLE TO ANY INSTITUTION OF BLOOD SERVICE.

UNCLASSIFIED

USSR

UDC 612.821.7+612.822.1

DANILOV, I. V., POPOVA, L. A., and KATINAS, V. A., Institute of Experimental Medicine, Academy of Sciences USSR, Leningrad

"Changes in Cat Behavior and Brain Bioelectrical Activity During Drowsiness After Polarization of Some Brain Structures"

Leningrad, Fiziologicheskii Zhurnal SSR, No 3, 1973, pp 367-372

Abstract: In chronic experiments on relatively unrestrained cats, micropolarization of various brain structures (sensorimotor, temporal, and occipital cortex) combined with electrical stimulation of hypnogenic zones (reticular formation or posterior hypothalamus) markedly altered the "ritual" of the animals' behavior (licking and washing movements) that generally precedes natural sleep. Micropolarization in the preparatory period lengthened the period of active washing movements and raised the thresholds of electrostimulation of the hypnogenic zones to induce sleep. But applied while the animals were drowsy, micropolarization accelerated the onset of sleep and made it longer and deeper. The sleep resulting from the combined effect of electrostimulation and polarization of hypnogenic zones was characterized by a change in the correlations of the slow- and fast-wave sleep phases in the various brain structures. Synchronism disappeared and the slow-wave and fast-wave phases became typical of the deep structures and cortical regions, respectively.

1/1

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USSR

UDC 612.82/83:822.5

DANILOV, I. V. and KUDRYAVTSEVA, N. N., Laboratory of Experimental Pathology of the Central Nervous System and Laboratory of Applied Neurophysiology, Institute of Experimental Medicine, Academy of Medical Sciences USSR

"Dynamics of Intercentral Relations in the Monkey Brain During Prolonged Rhythmic Photic Stimulation"

Leningrad, Fiziologicheskii Zhurnal SSSR, No 8, 1971, pp 1,089-1,098

Abstract: In experiments with rhythmic light flashes at different frequencies, monkeys exhibited individual sensitivity to certain rhythms. Some animals recruited and transformed the lower frequencies better (7.9 flashes per sec), while others responded to the higher frequencies (18 and 25 per sec). The following variations in the cortical and subcortical responses to the stimuli were distinguished: (a) simultaneous recruitment of the given rhythm by cells of the motor and visual cortex and subcortex; (b) recruitment of the rhythm only by the visual cortex; (c) recruitment of the rhythm by the visual cortex and its transformation in the subcortical structures; (d) recruitment only by the subcortex and motor cortex; (e) transformation in the visual cortex and recruitment by the deeper structures of the brain and motor cortex; (f) simultaneous transformation of the rhythm by all the structures recorded; (g) transformation by the visual cortex. All or a combination of these variations in brain activity could occur in the same experiment (30 to 60 min).

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USSR

UDC: 62-213.4.004+621.52

DANILOV, K. D.

"A Heated Superhigh-Vacuum Input"

Moscow, Fizika i Tekhnika Eksperimenta, No 2, Mar/Apr 72, pp 151-153

Abstract: The article describes a device for moving an object such as a specimen stage through a distance of up to 700 mm in a superhigh vacuum. The device consists basically of a rack moved by hand cranks with a system of tubes, bellows and vacuum locks to permit motion without losing vacuum. A diagram of the device is given with description of all essential parts. Operation of the drive mechanism is described. The principal parts are made of 1Kh18N9T stainless steel and can be heated to 450°C and higher. Tests have shown that the drive operates satisfactorily at a vacuum of about  $10^{-12}$  torr and has a characteristic leakage of less than  $5 \cdot 10^{-8}$  l.p/s. The author thanks S. A. Kirdayko, L. N. Nazarov, L. A. Medvedev and N. A. Shubin for assistance in making and debugging the input.

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1/2 021

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TITLE--HEMODYNAMICS OF THE MINOR CIRCULATORY CIRCUIT IN PATIENTS WITH  
ACUTE PULMONARY ABSCESSSES TREATED BY A METHOD OF REGIONAL INFUSION OF  
AUTHOR--(05)--UGLOV, F.G., SMIRNOV, A.D., DANILOV, L.N., YEGIAZARYAN, V.F.,  
GUSAROV, G.V.  
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TOPIC TAGS--HEMODYNAMICS, RESPIRATORY SYSTEM DISEASE, LUNG, ANTIBIOTIC

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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

HEMODYNAMIC CHANGES IN THE MINOR CIRCULATORY CIRCUIT IN PATIENTS WITH PULMONARY ABSCESSSES TREATED BY A METHOD OF REGIONAL INFUSION OF ANTIBIOTICS IN THE PULMONARY ARTERY TRUNK OR ITS CORRESPONDING BRANCH HAVE BEEN STUDIED, USING A METHOD OF THERMODILUTION. TOWARD THE END OF TREATMENT MINUTE VOLUME IN THE RIGHT VENTRICLE RETURNED TO VALUES COMMON FOR SUCH PATIENTS. WHILE OTHER HEMODYNAMIC INDICES IN THE MINOR CIRCULATORY CIRCUIT TO THE LAST DAY OF THERAPY USING THIS METHOD ALSO REDUCED OR SHOWED A TENDENCY TO NORMALIZATION. THE MENTIONED CHANGES IN HEMODYNAMIC INDICES CORRESPONDED TO CONSIDERABLE IMPROVEMENT OR COMPLETE ABORTION OF THE LOCAL PROCESS.

FACILITY: VSESOUZNOGO N-I INSTITUTA PULMONOLOGII MINISTERSTVA ZDRAVOOKHRANENIYA SSSR.

UNCLASSIFIED

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TITLE--SYNTHESIS OF A CLASS OF MATCHING NETWORKS -U-  
AUTHOR--(02)-DANILOV, L.V., DANILOV, G.V.   
COUNTRY OF INFO--USSR  
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSES THE FEASIBILITY OF DESIGNING REACTIVE MATCHING NETWORKS IN SUCH A WAY THAT THE REAL PART OF THE INPUT ADMITTANCE OF THE NETWORK, WHEN THE LATTER IS TERMINATED IN A LOAD WITH GIVEN FREQUENCY CHARACTERISTICS, BECOMES ALMOST CONSTANT OVER A REQUIRED FREQUENCY BAND. FORMULATION AND PROOF ARE GIVEN FOR A THEOREM WHICH STATES THAT THIS INSTANCE CAN BE SOLVED FOR ANY FREQUENCY BAND WIDTH, WITH ANY DESIRED ACCURACY.

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Physical Properties

USSR

UDC:538.245

KALININ, V. M., DANILOV, M. A., KOMAROVA, L. K., TSEYTSLIN, A. M., Sverdlovsk  
Agricultural Institute

"Influence of Titanium on the Physical Properties of Iron-Nickel Invar  
Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 2, 1973,  
pp 310-315

Abstract: This work presents an experimental study of the influence of  
0.72, 2.0, 2.6, 3.0 and 4.75 at.% Ti on  $I_s$ ,  $T_c$ , resistivity  $\rho$ , magneto-  
striction  $\lambda_s$ , magnetostriction susceptibility of the paraprocess  $\delta\lambda_p/\delta H$ ,  
lattice parameter  $a$ ,  $E$  and thermoelastic coefficient  $\gamma$  of iron-nickel  
alloys over a broad range of compositions (up to 60 wt.% Ni). It is  
shown that all properties change strongly upon addition of titanium.  
The results are explained on the basis of the theory of Sidorov and  
Doroshenko considering the valence of titanium and its ability to form  
(Ni, Fe)<sub>3</sub>Ti near order.

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DANILOV, M.A.

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# HETEROTOPIC HEART TRANSPLANTATION IN RATS

UDC: 616.12-0.89.84-082.9

Article by G.S. Lipovetzkij, V.G. Dorey, M.A. Danilov, Institute of Organ and Tissue Transplantation, USSR Academy of Medical Sciences, Moscow; Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 9, 1973, pp 78-81

Specialists in different fields, transplantologists, cardiologists, immunologists, physiologists, biochemists, and others, are interested in the model of heterotopic transplantation of the rat heart. Development in such a model is related to microsurgical technique. The methods we adopted for heterotopic transplantation of the heart are based on the works of Fisher et al., Abbott et al., Gul-Nong-Hung et al., and R.K. Nerensyan et al.

The transplantation scheme is as follows (Figure 1). The donor heart is connected through cannulas to the aorta and inferior vena cava (IVC) which were cut above the region of bifurcation in the recipient, creating the following anastomoses: abdominal aorta to donor heart aorta, IVC to pulmonary artery. All of the venous vessels of the donor heart were ligated. We used tubes made of polyfluorethylene resin. The external diameter of the tubes ranged from 0.8 to 1.5 mm for arterial anastomoses, and from 1.5 to 3.5 mm for venous ones, with a wall thickness of the cannulae ranging from 0.2 to 0.4 mm. They were about 5 mm long.

In this report, we shall discuss the surgical technique and main complications of the postoperative period.

Experiments were conducted on mongrel rats of both sexes, weighing 150 to 200 grams. In all 100 experiments were performed: 83 to perfect the surgical technique and 23 in which we determined the mean time of heart transplant function.

It must be noted that we were compelled to create vascular anastomoses over the tubes because we did not have the necessary equipment for the suture methods of making vascular anastomoses on this size vessels.

Anesthesia: 0.5-0.7 ml 2% hexenal solution was administered intraperitoneally to the recipient animal. Ten minutes later, it was immobilized on the operating table and surgery was subsequently performed under ether